WHAT IS CLAIMED IS:

1. A contrast agent for use in acquiring MRI images for the purpose of assessing tumor angiogenesis, said contrast agent comprising a reptating polymer containing gadolinium.

2. The contrast agent of claim 1 wherein length of the polymer is in a range of about 150-500 residues.

3. The contrast agent of claim 1 wherein length of the polymer is in a range of about 150-250 residues.

4. The contrast agent of claim 1 wherein length of the polymer is in a range of about 140-150 residues.

5. A method of making extended linear reptating polymers comprising the steps of:

dissolving at least one poly-L-lysine salt in an aqueous sodium bicarbonate solution to form a polylysine/sodium bicarbonate solution;

cooling the polylysine/sodium biocarbonate solution to a temperature of about 0°C;

combining diethylenetriaminepentaacetic acid (DTPA) and at least one acid acceptor in a dipolar aprotic solvent to form a second solution;

cooling the second solution to a temperature below about -35°C;

adding at least one alkylchloroformate to the second solution to form a mixture;

adding said mixture to the polylysine/sodium bicarbonate solution to form a second mixture; and

isolating a resulting DTPA substituted polymer from the second mixture.

6. The method of claim 5 wherein said aqueous sodium bicarbonate solution has a pH in the range of between about 8 and about 9 ½.

7. The method of claim 6 wherein said at least one acid acceptor comprises tiriethylamine.

8. The method of claim 6 wherein said dipolar aprotic solvent comprises acetonitrile.

9. The method of claim 6 wherein said at least one alkyl chloroformate comprises isobutylchloroformate.

10. The method of claim 6 wherein said poly-L-lysine salt comprises poly-L-lysine bydrobromide.

11. The method of claim 6 wherein said polylysine/sodium bicarbonate solution is cooled to at least -35°C.

12. The method of claim 6 wherein said polylysine/sodium bicarbonate solution is cooled to about -43°C.

13. The method of claim 6 wherein said polylysine/sodium bicarbonate solution is cooled to about -45°C.

14. The method of claim 6 wherein the step of adding the mixture to the polylysine/sodium bicarbonate solution is performed with said polylysine/sodium bicarbonate solution cooled to about 0°C.

15. The method of claim 5 wherein said aqueous sodium bicarbonate solution has a pH of about 9.

16. The method of claim 15 wherein said at least one acid acceptor comprises triethylamine.

17. The method of claim 15 wherein said dipolar aprotic solvent comprises acetonitrile.

18. The method of claim 15 wherein said at least one alkyl chloroformate comprises isobutylchloroformate.

19. The method of claim 15 wherein said poly-L-lysine salt comprises poly-L-lysine hydrobromide.

20. The method of claim 15 wherein said polylysine/sodium bicarbonate solution is cooled to at least -35°C.

21. The method of claim 15 wherein said polylysine/sodium bicarbonate solution is cooled to about -43°C.

22. The method of claim 15 wherein said polylysine/sodium bicabronate solution is cooled to about -45°C.

23. An extended linear reptating polymer prepared according to the process of claim 5.

24. An extended linear reptating polymer prepared according to the process of claim 7.

25. An extended linear reptating polymer prepared according to the process of claim 8.

26. An extended linear reptating polymer prepared according to the process of claim 9.

27. An extended linear reptating polymer prepared according to the process of claim 10.4.